A Collection of Amphibians and Reptiles from the Cardamom Mountains, Southwestern Cambodia

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Abstract

We describe a collection of 78 species of amphibians and reptiles from the Cardamom Mountains, southwestern Cambodia. One frog (*Calluella guttulata*), six lizards (*Draco taeniopterus*, *Dasia olivacea*, *Lygosoma bowringii*, *Scincella melanosticta*, *Sphenomorphus stellatum*, and *Ptychozoon lionotum*), and four snakes (*Boiga dendrophila*, *B. multomaculata*, *Rhabdophis nigrocinctus*, and *Xenochrophis trianguligerus*) are reported from Cambodia for the first time. Anthopogenically modified environments contain mostly species having broad geographic ranges in Southeast Asia. However, the frog and lizard faunas of intact environments in the Cardamom Mountains are largely distinct from those in the mountainous areas of eastern Cambodia.

Introduction

Most of Cambodia consists of low, flat, highly seasonal terrain in the Tonle Sap Basin and Mekong River floodplain. However, three areas in the country have sufficient topography to harbor swift, rocky streams, and these areas would be expected to contain an assemblage of amphibians and reptiles distinct from that of the lowlands. First, the hills and mountains in Mondolkiri, Ratanakiri, and Stung Treng Provinces in the extreme east form the lower slopes of the Langbian (= Da Lat) and Kontum Plateaus of the Annamite (= Truong Son) Mountains. Second, the Dangrek Mountains on the northern border of Cambodia and some satellite hills in north-central Cambodia form the southern escarpment of the Khorat Basin of northeastern Thailand. Third, the Cardamom (= Krâvanh) Mountains form a coastal and insular mountain range on the Gulf of Thailand in southwestern Cambodia and a small part of adjacent Thailand (Fig. 1). Historically, some authors have referred to the southeastern, mainland block of the Cardamom Mountains as the Elephant (= Dom Rei or Kamchay) Mountains. However, this southeastern block is no more isolated geographically than are other outlying blocks that are referred to the Cardamoms, and so here the Elephant Mountains are treated as synonymous with the Cardamom Mountains.

The Cardamom Mountains contain the highest, wettest, and largest tract of intact evergreen forest in Cambodia and are most notable for their geographic isolation from other large mountain ranges. The summit of Phnom (= Mount) Aural in the Cardamom Mountains is the highest point in Cambodia at 1771 m elevation. The Cardamom Mountains receive very high annual rainfall relative to surrounding areas, as the southern, coastal slopes are directly hit by the summer southwesterly monsoon (May–October) that picks up moisture for precipitation from the Gulf of Thailand (Maxwell, 2001). These coastal slopes receive 3000–5000 mm of annual rainfall, the highest in Cambodia, while the northern, inland slopes are slightly drier because of a rain shadow effect and receive 2000–3000 mm of annual rainfall (Gaussen et al., 1967). The extensive remaining forest cover in the Cardamom Mountains has attracted considerable attention for landscape-level biodiversity conservation efforts (e.g., Daltry & Momberg, 2000).

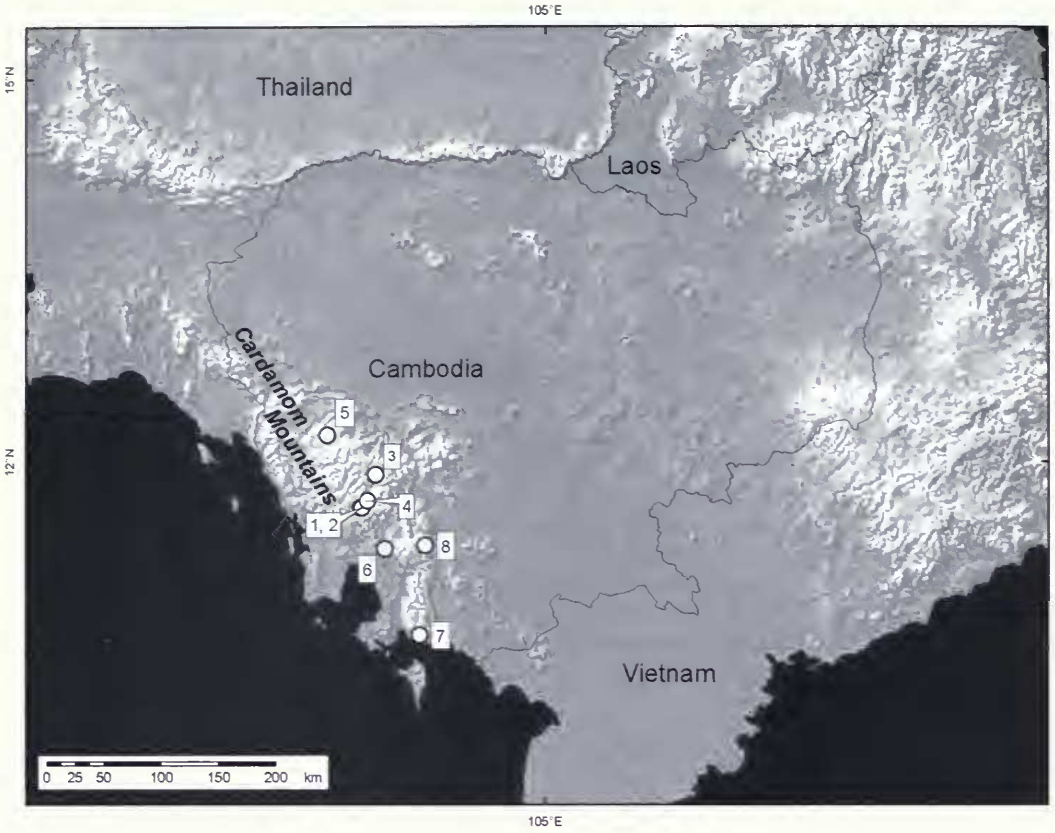

FIG. 1. Map illustrating the general collecting localities in this study. 1 = Areng Valley; 2 = Chum Noab; 3 = Knorgl Louk; 4 = Thmar Baing; 5 = Veal Sre Prang; 6 = Sre Ambel; 7 = Kampot; 8 = Phnom Sruoch.

One of the earliest amphibian and reptile collections from these uplands in southeastern Thailand and southwestern Cambodia was obtained by Henri Mouhot (1826–1861), French explorer and naturalist. Under sponsorship of the Royal Geographical and Zoological Societies of London, Mouhot explored Thailand, Cambodia, and Laos from 1858 until his death in Laos in November 1861. Beginning in December 1858, Mouhot traveled by boat from Bangkok along the coast of southeastern Thailand and southwestern Cambodia to the Cambodian port of Kampot (Mouhot, 1864). During this coastal voyage, Mouhot explored Chantaburi, including Khao Sebab Mountain, in southeastern Thailand and numerous offshore islands, including Koh Chang (Thailand) and Koh Kong (Cambodia). In his diary published posthumously, Mouhot (1864) reported an encounter with a large "boa" (genus *Python*) on Khao Sebab, that "iguanas" (probably *Varanus*) were abundant on Ko-Man Island, and that crocodiles (probably *Crocodylus porosus*) were abundant in coastal rivers and frequently attacked people, including two lethal attacks on people during just his brief visit to "Paknam-Ven." Mouhot's amphibian and reptile specimens were sent to the British Museum, where they were described by John Edward Gray and Albert Günther (Gray, 1859, 1861a, 1861b, 1862; Günther, 1861, 1864). Examples of new species of reptiles discovered by Mouhot during his coastal voyage from Bangkok to Kampot include *Tropidophorus microlepis* Günther, 1861, with type locality of Khao Sebab (Smith, 1935), and *Draco taeniopterus* Günther, 1861, with type locality of Chantabun (= Chantaburi; Smith, 1935).

The earliest worker to devote attention specifically to the amphibians and reptiles of the uplands of southeastern Thailand and southwestern Cambodia was Malcolm A. Smith, a British physician and naturalist who lived in

Bangkok for the first quarter of the twentieth century (Tenison, 1959). Smith first published (with C. Bodens Kloss) a treatise on the herpetofauna of the coast and islands of southeastern Thailand (Smith & Kloss, 1915). Later, Smith described a number of new species from collections he made in southeastern Thailand and southwestern Cambodia, including *Limnonectes kohchangae* (Smith, 1922), with type locality of Koh Chang; *Draco indochinensis* Smith, 1928, with type locality of Bockor (= Bokor); and *Cyrtodactylus intermedius* (Smith, 1917), with type locality of Khao Sebab.

During the height of French colonial power in Cambodia, René Bourret published a series of monographs (which also summarized his earlier publications) on the amphibians (1942), turtles (1941), and snakes (1936) of former French Indochina (= Cambodia, Laos, and Vietnam). In 1972, Hubert Saint Girons published a monograph on the snakes of Cambodia (Saint Girons, 1972). Both Bourret and Saint Girons reported on specimens from Bokor and Kirirom in the Cardamom Mountains, and Saint Girons also reported on specimens from coastal Tuk Sap, at the base of the Cardamom Mountains. Edward H. Taylor's monographs on the amphibians (1962), lizards (1963), and snakes (1965) of Thailand each dealt with material collected from the Thai side of the Cardamom Mountains (hereafter referred to as the Thai Cardamom Mountains). Additional work in the Thai Cardamom Mountains has resulted in species descriptions of a frog, *Paa fasciculispina* (Inger, 1970), and a gecko, *Cnemaspis chanthaburiensis* Bauer & Das, 1998.

After Saint Girons, years of civil conflict and security concerns hampered field investigations in Cambodia by foreign and national workers. A recent, improved political situation has made new fieldwork possible in the Cambodian side of the Cardamom Mountains (hereafter referred to as the Cambodian Cardamom Mountains), including their low-elevation river valleys. Ohler et al. (2002) reviewed the amphibian fauna known from the Cambodian Cardamom Mountains and described three new frog species, *Megophrys auralensis*, *Philautus cardamonus*, and *Rana faber*. Likewise, Daltry and Wüster (2002) described a new snake species, *Lycodon cardamomensis*, from the Cambodian Cardamom Mountains. Stuart and Platt (2004) reported new records of turtles from the region, including nine species from a Cardamom Mountain river valley in Koh Kong Province, Cambodia. Additional work in the Cambodian Cardamom Mountains has focused on the distribution and conservation status of two critically endangered large reptiles, *Crocodylus siamensis* and *Batagur baska* (Daltry & Chheang, 2000; Platt et al., 2003a, 2003b; Holloway & Heng, 2004). No review of the reptile fauna of the Cambodian Cardamom Mountains has yet been presented.

Here we report on new amphibian and reptile collections made in 2000 and 2003–2004 in the Cambodian Cardamom Mountains (Fig. 1).

Study Areas

Bokor National Park is situated in Kampot District, Kampot Province, Cambodia, at the southeastern end of the Cardamom Mountains. The park is approximately 140,000 ha in size and ranges from approximately 100 m elevation to a maximum of 1087 m elevation on the Bokor Plateau. The plateau is covered in a mosaic of grassland with heath forest and sandstone outcrops, and the slopes of the plateau are covered in evergreen forest. The ruins of a French colonial resort town on the southern escarpment of the plateau overlook the Gulf of Thailand. The senior author, An Dara, and Hout Piseth collected specimens of amphibians and reptiles at Bokor National Park from 5 to 15 May 2000.

Kirirom National Park is situated in Phnom Sruoch District, Kampong Speu Province, Cambodia, at the northeastern end of the Cardamom Mountains. The park is approximately 35,000 ha in size and ranges from approximately 150 m elevation to a maximum of 903 m elevation on the Kirirom Plateau. The plateau is covered in a mosaic of grassland with pine forest, and the slopes of the plateau are covered in evergreen forest (sometimes mixed with deciduous or bamboo forest). The senior author and An Dara collected specimens of amphibians and reptiles at Kirirom National Park from 3 to 7 June 2000.

The Central Cardamoms Protected Forest is situated within the Koh Kong and Pursat Provinces, Cambodia, and forms the central section of the Cardamom Mountains. The protected forest is 402,000 ha in size and ranges from approximately 100 m elevation to a maximum of 1551 m on the Krâvanh plateau. The plateau is covered with montane evergreen forest interspersed with grassland and pine forest. The slopes of the plateau are covered with evergreen

TABLE 1. Complete locality information for the general locality names provided in Species Accounts. Locality numbers refer to Figure 1.

Locality no.	Locality	Protected area	Province	District
1	Areng Valley	Central Cardamoms Protected Forest	Koh Kong	Thmar Baing
2	Chum Noab	Central Cardamoms Protected Forest	Koh Kong	Thmar Baing
3	Knorgl Louk	Central Cardamoms Protected Forest	Pursat	Krâvanh
4	Thmar Baing	Central Cardamoms Protected Forest	Koh Kong	Thmar Baing
5	Veal Sre Prang	Central Cardamoms Protected Forest	Pursat	Veal Veng
6	Sre Ambel	None	Koh Kong	Sre Ambel
7	Kampot	Bokor National Park	Kampot	Kampot
8	Phnom Sruoch	Kirirom National Park	Kampong Speu	Kampong Speu

forest. The junior author, Annette Olsson, Heng Namyi, Heng Sokrith, and Anthony Simms collected specimens of amphibians and reptiles at the Central Cardamoms Protected Forest from 20 to 31 December 2003, 20 to 30 January 2004, 18 February to 2 March 2004, 23 March to 6 April 2004, 23 to 30 August 2004, and 27 September to 5 October 2004.

The Prek Sre Ambel River watershed drains the southwestern slopes of the Cambodian Cardamom Mountains into the Kampong Saom Bay, Gulf of Thailand. The banks of the Prek Sre Ambel River are lined with mangrove and melaleuca forests. Neighboring hills, such as Phnom Chan Mountain, are covered in evergreen mixed with deciduous forest. The senior author, An Dara, Steven G. Platt, and Monyrath Vuthy collected specimens of amphibians and reptiles along the Sre Ambel River in Sre Ambel District, Koh Kong Province, Cambodia, from 21 to 27 August 2000.

Materials and Methods

Most specimens were caught by hand while actively searching day and night, particularly in riparian areas. In addition, pitfall trap arrays consisting of three 50-m-long drift fences with buckets positioned at each end of the drift fences and at 10-m intervals along the drift fences were set for eight continuous days at Areng Valley, Chum Noab, and Thmar Baing. One large (60-l) bucket was included in each pitfall trap array to capture large species of amphibians and reptiles. One lizard was obtained as bycatch from a small mammal mesh trap baited with banana. Geographic coordinates of localities were determined using handheld Global Positioning System units and are reported as either latitude and longitude or Universal Transverse Mercator system.

Specimens were preserved in 10% buffered formalin and later transferred to 70% ethanol. Tissue samples were taken by preserving pieces of liver or muscle in 95% ethanol before the specimens were fixed in formalin. Specimens and tissues were deposited in the Field Museum, Chicago (FMNH). Comparative material was examined at the Field Museum, the Natural History Museum, London (BMNH), and the Thailand Natural History Museum, Pathumthani, Thailand (THNHM).

Measurements were made with dial calipers to the nearest 0.1 mm. Measurement abbreviations used are SVL = snout–vent length and TIB = tibia length. Only species with preserved voucher specimens are reported here. Turtle records are presented elsewhere (Stuart & Platt, 2004; D. Emmett, unpublished data). Locality names are abbreviated in species accounts for the sake of brevity but are provided in full in Table 1.

Species Accounts

A total of 78 species were collected during the course of this work. Twenty of these species (Table 2) are characteristic of anthropogenically modified environments and were collected in a wide range of elevations near villages, agricultural lands, and roads, with some also taken in open grassland or disturbed forest. Although some of these taxa might actually represent complexes of sibling species (e.g., *Fejervarya limnocharis*, *Polypedates leucomystax*, and *Calotes versicolor*), they are currently recognized to have broad geographic ranges in mainland Southeast Asia and will not be dealt with further here.

TABLE 2. Voucher numbers and localities of amphibian and reptile species from the Cambodian Cardamom Mountains that are characteristic of anthropogenically modified environments.

Taxon	FMNH voucher	Locality
Bufonidae		
Bufo melanostictus Schneider, 1799	263324–263325	Thmar Baing
	263054–263062, 263085–263089	Kampot
	263063–263067	Phnom Sruoch
	263068, 263083	Sre Ambel
Microhylidae		
Microhyla butleri Boulenger, 1900	261916, 262657	Phnom Sruoch
	261905–261913	Kampot
	267796–267797	Knorgl Louk
Microhyla fissipes Boulenger, 1884	261914–261915	Phnom Sruoch
	263292, 263296–263297, 263310	Thmar Baing
	262696–262698, 262704–262708	Sre Ambel
Microhyla heymonsi Vogt, 1911	263311–263312, 263315	Thmar Baing
	267793–267795	Knorgl Louk
	262050–262054	Kampot
	262055–262057	Phnom Sruoch
Microhyla pulchra (Hallowell, 1861)	262678–262680	Sre Ambel
Ranidae		
Fejervarya limnocharis (Gravenhorst, 1829)	263326–263328	Thmar Baing
	261981–261989	Phnom Sruoch
	261998–262007, 262010, 262012	Sre Ambel
Hoplobatrachus rugulosus (Wiegmann, 1834)	262592–262595	Phnom Sruoch
	262598–262600, 262602	Sre Ambel
	267764	Areng Valley
Occidozyga lima (Gravenhorst, 1829)	267802–267803	Areng Valley
	261787–261788, 261790	Sre Ambel
	261776–261784	Phnom Sruoch
Occidozyga martensii (Peters, 1867)	263308–263309, 263332, 263334	Thmar Baing
	267761–267762	Areng Valley
	261809	Phnom Sruoch
	261792–261796	Sre Ambel
	261797–261805	Kampot
Rana erythraea (Schlegel, 1837)	263286, 263289, 263305	Thmar Baing
	267778, 267782	Areng Valley
Rana macrodactyla (Günther, 1858)	262062	Sre Ambel
	262066	Phnom Sruoch
Rhacophoridae		
Polypedates leucomystax (Gravenhorst, 1829)	263287, 263329–263331	Thmar Baing
	263108–263129, 263186–263188	Kampot
	263137–263151	Phnom Sruoch
	263172–263180, 263184–263185	Sre Ambel
	267774–267776	Areng Valley
	267777	Knorgl Louk
Agamidae		
Calotes versicolor (Daudin, 1802)	263338–263339	Thmar Baing
	262037–262041	Kampot
	262042–262045	Phnom Sruoch
	262048–262049	Sre Ambel
Scincidae		
Eutropis macularia (Blyth, 1853)	267743	Chum Noab
	263350–263352	Thmar Baing
	261832, 261840	Kampot
	261841–261842	Phnom Sruoch
Eutropis multifasciata (Kuhl, 1820)	261830	Sre Ambel
	263340–263342	Thmar Baing

TABLE 2. Continued.

Taxon	FMNH voucher	Locality
Gekkonidae		
Gehyra mutilata (Wiegmann, 1835)	261836	Phnom Sruoch
	263349	Thmar Baing
Gekko gecko (Linnaeus, 1758)	261847	Phnom Sruoch
Colubridae		
Dendrelaphis pictus (Gmelin, 1789)	259219	Phnom Sruoch
Ptyas korros (Schlegel, 1837)	263392	Thmar Baing
Rhabdophis subminiatus (Schlegel, 1837)	267737	Chum Noab

Megophryidae

***Megophrys auralensis* Ohler, Swan & Daltry, 2002**

Knorgl Louk: FMNH 267763, evergreen forest, 0355440 E 1314799 N, 1200 m elev., 30 September 2004.

A juvenile female (SVL 36.6) has short, rounded vomerine ridges without teeth; no light-colored upper lip stripe; a weakly visible palpebral tubercle; basal toe webbing with dermal fringes; finger II shorter than finger IV; and a gray (white in preservative) belly with black spots.

The specimen was collected during the day (1130 h) on leaf litter on a hilltop in evergreen forest.

This is the first report of the species since its original description from Phnom Aural Mountain in the Cambodian Cardamom Mountains.

Microhylidae

***Calluella guttulata* (Blyth, 1855)**

Thmar Baing: FMNH 263316, disturbed lowland dry evergreen forest along Russei Chrum River, 0315086 E 1322308 N, 400 m elev., 23 December 2003.

A single male (SVL 33.9) has an obtusely rounded snout longer than eye diameter; second finger shorter than fourth; webbing on fourth toe reaching level slightly distal of proximal subarticular tubercle, continuing as fringe to tip; dorsum brown with distinct, dark brown irregular markings; and the throat heavily pigmented.

The specimen was collected at night (1900 h) on leaf litter 20 m from a river. When disturbed, it tried to evade capture by burrowing backward into the soil.

This is the first report of the species from Cambodia.

***Kalophrynus interlineatus* (Blyth, 1855)**

Thmar Baing: FMNH 263298, Tatai Leu, lowland dry evergreen forest, 0331700 E 1297000 N, 350 m elev., 18 February 2004.

Areng Valley: FMNH 267757, seasonally flooded lowland evergreen forest, 0342411 E 1286399 N, 180 m elev., 26 August 2004.

These agree with the expanded descriptions by Parker (1934; as a subspecies of *K. pleurostigma* Tschudi) and Matsui et al. (1996) by having the third toe webbing not extending beyond the distal subarticular tubercle and the free portion of the fifth toe longer than the distance from snout to nostril. The dorsum has an inverted V-shaped dark marking, and the groin has a black ocellar spot edged in white. FMNH 263298 also has scattered round, black spots on the dorsum.

Both specimens were collected during the day (1400–1430 h). FMNH 263298 was under a log 15 m from a pond, and FMNH 267757 was on leaf litter 10 m from a marsh.

Ohler et al. (2002) reported the species from the Cambodian Cardamom Mountains, and Stuart et al. (2006) reported it from hilly eastern Cambodia. Parker (1934) and Bourret (1942) also reported the species from Cambodia but without specific localities.

***Microhyla berdmorei* (Blyth, 1856)**

Sre Ambel: FMNH 262654–262655, evergreen mixed with deciduous forest, Phnom Chan Mountain, near 11°26′30″N 103°47′00″E, 100–200 m elev., 25 August 2000.

Thmar Baing: FMNH 263294, Tatai Leu, disturbed lowland dry evergreen forest, 0340445 E 1307223 N, 410 m elev., 22 January 2004. FMNH 263295, Tatai Leu, disturbed lowland dry evergreen forest, 0341461 E 1307640 N, 420 m elev., 23 January 2004.

FIG. 2. *Limnonectes kohchangae*, Areng Valley.

Areng Valley: FMNH 267766, seasonally flooded lowland evergreen forest, 0342411 E 1286399 N, 200 m elev., 28 September 2004.
Knorgl Louk: FMNH 267792, evergreen forest, 0355440 E 1314799 N, 1200 m elev., 30 September 2004.

An adult female (SVL 33.8) and five adult males (SVL 27.7–32.0, mean ± SD 29.4 ± 1.6, N = 5) have an obtusely pointed snout; toes fully webbed, reaching base of expanded discs on toes; third and fifth toes equal in length; inner and outer metatarsal tubercle; dark throat; and a distinctive yellow venter.

Specimens were collected day and night on riverbanks and on the forest floor away from water.

Bourret (1942) reported the species from north-central Cambodia, Bourret (1942) and Ohler et al. (2002) reported it from the Cambodian Cardamom Mountains, and Stuart et al. (2006) reported it from hilly eastern Cambodia.

***Micryletta inornata* (Boulenger, 1890b)**
Areng Valley: FMNH 267759–267760, disturbed lowland dry evergreen forest, 0344523 E 1286485 N, 200 m elev., 1 April 2004.

These agree with Boulenger's (1890b) original description and Parker's (1934) expanded description by having a distinct tympanum; well-developed subarticular tubercles; an inner but no outer metatarsal tubercle; toes without webbing; digit tips without expanded discs or clefts; and a gray dorsum with large black spots.

The specimens were collected in pitfall traps.

Ohler et al. (2002) reported the species from the Cambodian Cardamom Mountains.

Ranidae
***Limnonectes kohchangae* (Smith, 1922) (Fig. 2)**
Kampot: FMNH 263189–263190, 263193–263199, 263205, grassland with heath forest and sandstone outcrops, 10°37′35″N 104°01′30″E, 1000 m elev., 6–14 May 2000. FMNH 263201–263202, grassland with heath forest and sandstone outcrops, near 10°37′46″N 104°01′37″E, 1000 m elev., 11 May 2000. FMNH 263203–263204, grassland with heath forest and sandstone outcrops, near 10°37′54″N 104°00′56″E, 1000 m elev., 13 May 2000. FMNH 263191–263192, hill evergreen forest along Prek Kaoh Toch River, 10°37′53″N 104°02′33″E, 900 m elev., 6–7 May 2000. FMNH 263200, 263206–263208, hill evergreen forest along Prek Kaoh Toch River, near 10°37′19″N 104°02′52″E, 800–900 m elev., 10–14 May 2000.
Phnom Sruoch: FMNH 263209–263215, grassland and open pine forest plateau, near 11°19′14″N 104°04′56″E, 700 m elev., 3 June 2000. FMNH 263216, evergreen mixed with deciduous forest along O Tasek Stream, near 11°18′39″N 104°04′42″E, 500–600 m elev., 4 June 2000. FMNH 263217, disturbed evergreen mixed with deciduous and bamboo forest along O Krang Snoul Stream, near 11°22′00″N 104°06′28″E, 300-400 m elev., 5 June 2000.
Sre Ambel: FMNH 263218–263223, Phnom Chan Mountain, evergreen mixed with deciduous forest, 11°26′30″N 103°47′00″E, 100–200 m elev., 25 August 2000.

Thmar Baing: FMNH 263319, disturbed gallery forest along Russei Chrum River, 0315086 E 1322308 N, 380 m elev., 28 December 2003. FMNH 263333, disturbed gallery forest along Russei Chrum River, 0316924 E 1322783 N, 400 m elev., 23 December 2003. FMNH 263320, Tatai Leu, disturbed lowland dry evergreen forest, 0339935 E 1306680 N, 420 m elev., 27 January 2004. FMNH 263321, Tatai Leu, disturbed lowland dry evergreen forest, 0340889 E 1307138 N, 430 m elev., 29 January 2004. FMNH 263322–263323, pine mixed with hill evergreen forest, 0359518 E 1289987 N, 800 m elev., 19–21 February 2004.
Knorgl Louk: FMNH 267783, evergreen forest, 0354290 E 1311937 N, 900 m elev., 27 September 2004. FMNH H 267784–267787, evergreen forest, 0355440 E 1314799 N, 1200 m elev., 30 September 2004.

A large series agrees with Smith's (1922) original description and a syntype female (FMNH 128288), which we have examined, except that our males lack vocal sac openings. The Cambodian specimens have rows of longitudinal ridges on back; small round tubercles on sacrum, around vent, and dorsal surface of tibiotarsus; distinct tarsal fold; elongate inner but no outer metatarsal tubercle; toe tips expanded into discs; a light-colored band between eyes, usually bordered posteriorly by a black band; and usually the triangular area of skin between the eye band and snout tip lighter in coloration than rest of dorsum. Ten of 47 (21.3%) specimens have a yellowish (in preservative) vertebral stripe. Males (SVL 31.0–42.2, mean ± SD 35.9 ± 3.5, N = 21) and females (SVL 32.2–41.5, mean ± SD 35.2 ± 3.3, N = 14) do not differ in body size. However, males differ from females by having an enlarged head (not enlarged in females), tympanum diameter greater than eye diameter (tympanum diameter less than eye diameter in females), longitudinal folds with black pigment at outer margin of throat (absent in females), and enlarged odontoids at the front of the mandible (absent in females).

Specimens were collected day and night in shallow water and on the bank of small, rocky, forested streams and flowing seeps in grassy fields.

Ohler et al. (2002) reported the species from the Cambodian Cardamom Mountains. The type locality of Koh Chang Island in southeastern Thailand is just offshore of the Cardamom Mountains.

FIG. 3. *Paa fasciculispina*, Knorgl Louk.

***Paa fasciculispina* (Inger, 1970) (Fig. 3)**

Knorgl Louk: FMNH 267769–267770, evergreen forest, 0354290 E 1311937 N, 900 m elev., 27 September 2004.

A male (SVL 87.4) and female with a convoluted oviduct (SVL 89.0) agree with Inger's (1970) original description, the female paratype (FMNH 171309), which we have examined, and a series of topotypes (FMNH 191461–191466, 210106–210108). These have expanded toe discs; proximal subarticular tubercles of fingers twice as long as distal subarticular tubercles; and short, thick ridges on the back, none as long as the eye diameter, interspersed with round warts. The male has black asperities on tubercles on the upperparts and in clusters of up to five on the chest, but these are not developed into strong black spines as in the holotype and some topotype males (FMNH 191464–191465, 210106). This may be an artifact of age, as the Cambodian male is also smaller than the holotype and topotype males that bear strong spines. The Cambodian male has strong black spines on the prepollex and dorsal surface of fingers. The female also has black asperities on tubercles on the upperparts and on the throat and chest, but those on the throat and chest are smaller, less numerous, and not grouped as in the male. Black asperities are absent in the female paratype and so were not mentioned in the original description, but a female topotype (FMNH 210108) has black asperities in a similar condition to the Cambodian female. In life, the Cambodian specimens had a mottled dark brown dorsum and a white venter.

Both specimens were taken at night (2020–2130 h) along a steep stream. FMNH 267769 was on a rock in shallow water, and FMNH 267770 was on a rock 20 cm from the stream.

Ohler et al. (2002) reported the species from the Cambodian Cardamom Mountains. The type locality at Kao Soi Dao Mountain, Chantaburi Province, southeastern Thailand, is in the Thai Cardamom Mountains.

***Rana faber* Ohler, Swan & Daltry, 2002**

Kampot: FMNH 262621–262625, 262631, hill evergreen forest along Prek Kaoh Toch River, near 10°37′53″N 104°02′33″E, 900 m elev., 7–12 May 2000. FMNH 262626–262630, 262632–262633, hill evergreen forest along Prek Kaoh Toch River, near 10°37′19″N 104°02′52″E, 800–900 m elev., 10–14 May 2000.

Knorgl Louk: FMNH 267767, evergreen forest, 0355440 E 1314799 N, 1200 m elev., 30 September 2004. FMNH 267771–267773, evergreen forest, 0354290 E 1311937 N, 900 m elev., 27 September 2004.

Four males (SVL 59.3–64.0, mean ± SD 62.0 ± 2.1, N = 4) and 13 females (SVL 76.6–89.2, mean ± SD 82.6 ± 3.9, N = 13) agree with Ohler et al.'s (2002) original description, except in size. Ohler et al. (2002) reported the SVL of the holotype male to be both 59.4 (p. 475) and 76.7 (p. 476, fig. 3), but the correct size is 59.4 (A. Ohler, personal communication to B. L. Stuart, 1 September 2005). Additionally, our females have an SVL more than 18 mm larger than those reported for three adult females in the type series (SVL 57.1–57.8, mean ± SD 57.4 ± 0.3, N = 3; table 7 in Ohler et al. 2002). Chuaynkern et al. (2004) remeasured adult males in the type series, including the holotype (SVL 51.0–79.3, mean ± SD 60.1 ± 7.3, N = 17), and two adult females that are not part of the type series (SVL 77.2–84.3, N = 2), and these measurements of both sexes generally agree with our specimens. There is a difference in the number of males versus females assigned to the type series between Ohler et al. (2002) and Chuaynkern et al. (2004), but this does not explain the discrepancy in measurements between the two studies, as no specimens of either sex were reported by Ohler et al. (2002) to have SVL larger than 66.9 (except the second, erroneous measurement given for the holotype). Chuaynkern et al. (2004) reidentified one small male (SVL 39.5) in the type series of *R. faber* to be *R. milleti* Smith, 1921, but this does not explain the discrepancy in measurements between the two studies. We are confident that our females are conspecific with our males, as these differ only in size and secondary sexual characteristics, and they share identical mitochondrial DNA haplotypes (Stuart, unpublished data). For these reasons and because our measurements generally agree with those of Chuaynkern et al. (2004), we assume that the adult female measurements presented in the original description are also in error.

Otherwise, the Kampot specimens agree with the original description by having males with a humeral gland that is visible externally but does not form a conspicuous bulge; males with nuptial pad on dorsal surface of finger I; males with vocal sac opening near corner of mouth but no gular pouch; distinct dorsolateral fold; scattered asperities on upper parts; brown dorsum, with most specimens also having light-colored, lichen-like flecking on back; and creamy-white venter with gray-brown flecking, with throat and chest same color as belly.

Rana faber occurs syntopically with the similar-looking *R. mortenseni* Boulenger, 1903 (see account below). In our samples, *R. faber* is distinguished from *R. mortenseni* by having males with smaller SVL than females (males and females with same SVL in *mortenseni*), females with larger SVL (SVL 76.6–89.2, mean ± SD 82.6 ± 3.9, N = 13, in *faber*; SVL 59.4–71.9, mean ± SD 65.8 ± 4.3, N = 8, in *mortenseni*), females with relatively longer tibia (TIB:SVL 0.61–0.65, median 0.62, N = 13, in *faber*; TIB:SVL 0.52–0.58, median 0.56, N = 8, in *mortenseni*), and males with humeral gland that does not form an externally conspicuous bulge (humeral glands form an externally conspicuous bulge in *mortenseni*).

Specimens were collected at night (1800–2118 h) on boulders, rock faces, a tree root, and a leaf litter bank within 8 m of a swift, rocky, cascading river, often within the spray zone of cascades.

The type locality is Phnom Aural Mountain in Kampong Speu Province, Cambodian Cardamom Mountains. Chuaynkern et al. (2004) also reported the species from the "Bokhor Mountains" (= Bokor), in the Cambodian Cardamom Mountains.

***Rana milleti* Smith, 1921**

Knorgl Louk: FMNH 267799, evergreen forest, 0355440 E 1314799 N, 1200 m elev., 30 September 2004.

A single female (SVL 40.7) agrees with Smith's (1921) original description and Inger et al.'s (1999) amplified description, except that the webbing on the fourth toe reaches the distal subarticular tubercle. The specimen has a strong

dorsolateral fold, granular skin with many small tubercles on back, a dark band from tip of snout through eye to tympanum, dark spotting on ventral surface of thigh and tibia, and a dark brown network around small light blotches on the posterior surface of thigh.

The specimen was collected during the day (1300 h) on leaf litter on a hilltop in evergreen forest.

Chuaynkern et al. (2004) reported the species from the Cambodian Cardamom Mountains.

***Rana mortenseni* Boulenger, 1903**

Kampot: FMNH 261949–261951, 261962, grassland with heath forest and sandstone outcrops, 10°37′35″N 104°01′30″E, 1000 m elev., 17 January and 5 May 2000. FMNH 261952–261955, hill evergreen forest along Prek Kaoh Toch River, near 10°37′53″N 104°02′33″E, 900 m elev., 7 May 2000. FMNH 261956–261957, gallery evergreen forest along large river, near 10°39′28″N 104°03′07″E, 950 m elev., 9 May 2000. FMNH 261958–261960, hill evergreen forest along Prek Kaoh Toch River, near 10°37′19″N 104°02′52″E, 800–900 m elev., 10 May 2000. FMNH 261980, 262634–262635, disturbed evergreen and bamboo forest along O Taron Trao Stream, near 10°40′49″N 104°06′01″E, 220–300 m elev., 15 May 2000.

Phnom Sruoch: FMNH 261963, 261965–261968, evergreen mixed with deciduous forest along O Tasek Stream, near 11°18′39″N 104°04′42″E, 500–600 m elev., 3–4 June 2000. FMNH 261964, grassland and open pine forest plateau, near 11°19′14″N 104°04′56″E, 700 m elev., 3 June 2000. FMNH 261969–261970, 262636, disturbed evergreen mixed with deciduous and bamboo forest along O Krang Snoul stream, near 11°22′00″N 104°06′28″E, 300–400 m elev., 5 June 2000.

Thmar Baing: FMNH 263300, disturbed gallery evergreen forest along Russei Chrum River, 0315086 E 1322308 N, 400 m elev., 30 December 2003. FMNH 263299, disturbed gallery evergreen forest along Russei Chrum River, 0313880 E 1321887 N, 390 m elev., 30 December 2003. FMNH 263318, hill evergreen forest, 0361050 E 1290990 N, 700 m elev., 27 February 2004. FMNH 263301, 263303–263304, Tatai Leu, disturbed lowland dry evergreen forest, 0340445 E 1307223 N, 370–410 m elev., 21–26 January 2004. FMNH 263302, Tatai Leu, disturbed lowland dry evergreen forest, 0340120 E 1306832 N, 360 m elev., 26 January 2004.

A large series agrees with Boulenger's (1920) expanded description and topotypes from Koh Chang Island, southeastern Thailand (THNHM 4199–4200, 4202–4203), which we have examined. Males (SVL 60.0–75.0, mean ± SD 65.8 ± 5.6, N = 10) and females (SVL 59.4–71.9, mean ± SD 65.8 ± 4.3, N = 8) do not differ in size, except males have larger heads with more pronounced temporal swellings. Males also have a round, black, well-developed humeral gland; thin nuptial pad on the dorsal surface of the first finger; and vocal sac opening near corner of mouth but no gular pouch. The venter of both sexes varies from creamy-white to heavily mottled with brown, with some individuals having the throat and chest darker than the belly.

Ohler et al. (2002) stated that "*R. mortenseni* is abundant in the lowland dry evergreen and gallery forests of the basin areas and lower slopes but was rarely found above c. 700 m a.m.s.l.; *R. faber*, although found at lower altitudes, was more common on streams above the extent of *R. mortenseni*'s ecological range." We collected *R. mortenseni* from 220 to 1000 m elevation, and it was abundant at Kampot from 800 to 900 m elevation in hill evergreen forest along the Prek Kaoh Toch River, where it lived syntopically with *R. faber*.

Specimens were collected day and night in water and on the bank of swift, rocky, cascading streams and rivers, slow-moving streams and rivers, and a reservoir.

Ohler et al. (2002) reported the species from the Cambodian Cardamom Mountains. The type locality of Koh Chang Island in southeastern Thailand is just offshore of the Cardamom Mountains.

Rhacophoridae

***Chirixalus nongkhorensis* (Cochran, 1927)**

Kampot: FMNH 263090–263093, disturbed evergreen forest mixed with bamboo along O Taron Trao Stream, near 10°40′49″N 104°06′01″E, 220–300 m elev., 15 May 2000.

Areng Valley: FMNH 267800–267801, disturbed evergreen forest, within 20 km of Chumnoap Village, 0343257 E 1286329 N, 200 m elev., 4 April 2004.

Six males (SVL 25.2–28.5, mean ± SD 27.1 ± 1.2, N = 6) agree with Cochran's (1927) original description and a male paratype (FMNH 109989), which we have examined. The Cambodian specimens have the two outer fingers

appearing to be opposable to the two inner ones; webbing at the base of the two outer fingers; interorbital distance much greater than width of upper eyelid; dorsum brownish with irregular darker markings; and upper surface of hind limb with dark spots but no complete crossbars.

The Kampot specimens were collected at night (2030 h) on shrub leaves in a forest clearing, and the Areng Valley specimens were collected at night (1930 h) on leaf litter less than 1 m from a puddle.

Stuart et al. (2006) reported the species from hilly eastern Cambodia. The type locality is in southeastern Thailand, near to Cambodia.

***Chirixalus vittatus* (Boulenger, 1887a)**

Areng Valley: FMNH 267804, wetland, 0344827 E 1287278 N, 200 m elev., 27 March 2004.

A single male (SVL 19.6) agrees with Boulenger's (1887a) original description from "Bhamò," Myanmar, by having a pointed snout; yellowish coloration above, speckled with brown, most densely on head; whitish stripe from tip of snout to groin, extending over outer margin of upper eyelid; and white venter. The two outer fingers appear to be opposable to the two inner ones.

Cochran (1927) described *Chirixalus hansenae* (as *Philautus hansenae*) from southeastern Thailand, a type locality much closer to Cambodia than that of *C. vittatus*. However, Cochran's description of *C. hansenae* closely matches the description of *C. vittatus*, and Cochran did not compare the new species against *C. vittatus*. The two specimens of unstated sex in the type series of *C. vittatus* have SVL 25 (Boulenger, 1887a). The holotype male of *C. hansenae* has SVL 21, and the largest paratype female of *C. hansenae* has SVL 23 (Cochran, 1927). Taylor (1962, p. 523) was "not wholly convinced of the specific distinctness of the two forms" but stated that "presumably there is a very considerable difference in size" between them. Taylor (1962) then reported *C. vittatus* from Thailand to have males with SVL 26–28 and females with SVL 31–32 and *C. hansenae* from Thailand to have males with SVL 21–21.5 and females with SVL 23–24. The possibility exists that these names are being applied to different size classes within populations. *Chirixalus hansenae* is probably a junior synonym of *C. vittatus*, but a study on variation within and among populations is warranted before making a formal taxonomic decision.

The Cambodian specimen was collected at night (1930 h) on a wet sandbank 1 m from a pond.

Ohler et al. (2002) reported the species from the Cambodian Cardamom Mountains.

***Philautus parvulus* (Boulenger, 1893)**

Kampot: FMNH 261891–261893, 261895, grassland with heath forest and sandstone outcrops, 10°37′35″N 104°01′30″E, 1000 m elev., 5–11 May 2000. FMNH 261894, hill evergreen forest along Prek Kaoh Toch River, near 10°37′53″N 104°02′33″E, 900 m elev., 7 May 2000.

Five adult males (SVL 17.2–19.6, mean ± SD 18.4 ± 1.0, N = 5) agree with Boulenger's (1893) original description and a female paratype (FMNH 97977) from "Karin Bia-po," Myanmar, which we have examined. These have the tympanum hidden; interorbital distance greater than width of upper eyelid; large vocal sac; no vomerine teeth; expanded discs on fingers and toes; no finger webbing; and webbing on the third and fifth toes reaching the distal subarticular tubercle.

The specimens were collected at night calling from low vegetation.

Ohler et al. (2002) reported the species from the Cambodian Cardamom Mountains.

***Rhacophorus bipunctatus* Ahl, 1927**

Thmar Baing: FMNH 263288, pine mixed with evergreen forest, 0358926 E 1289969 N, 800 m elev., 26 February 2004.

A single male (SVL 33.3) has webbing on fourth finger to base of disc, on third finger to distal edge of distal subarticular tubercle, continuing as a narrow fringe to disc; a small dermal projection at the tibiotarsal joint; a low, transverse flap of skin above the vent; and a dark axillary spot. In life, the dorsum was dark gray with small black spots, and the venter was orange.

The specimen was collected on a hilltop at night (2000 h) calling from a twig 2 m above the ground, 1 m from a small stream.

Ohler et al. (2002) reported the species from the Cambodian Cardamom Mountains.

***Rhacophorus bisacculus* Taylor, 1962 (Fig. 4)**

Kampot: FMNH 261898–904, grassland with heath forest and sandstone outcrops, near 10°37′35″N 104°01′30″E, 1000 m elev., 6–13 May 2000.

Knorgl Louk: FMNH 267755, evergreen forest, 0355440 E 1314799 N, 1200 m elev., 30 September 2004.

FIG. 4. *Rhacophorus bisacculus*, Kampot.

Seven adult males (SVL 27.0–30.6, mean ± SD 28.5 ± 1.3, N = 7) from Kampot and a juvenile from Knorgl Louk agree with Taylor's (1962) original description and the holotype (FMNH 178202) from Phu Kading, Loei Province, Thailand, which we have examined. The Cambodian specimens have the postaxial side of the third finger webbed to a level distal of the proximal subarticular tubercle; a row of light-colored elongated tubercles on outer edge of finger IV to elbow and on outer edge of toe V to heel; and ventral pigmentation concentrated on the throat as a dark cloud or spots, with few or no spots on the belly. In life, the juvenile had a pale brown dorsum, white flank with a black spot in the inguinal region, and a white venter with black spots on throat.

The Kampot adults were collected at night (1900–2030 h) calling from vegetation 1–2 m above the ground, near a pond or away from standing water. The Knorgl Louk juvenile was collected during the day (1200 h) on a tree 2 m above the ground.

Ohler et al. (2002) reported the species from the Cambodian Cardamom Mountains.

***Theloderma stellatum* Taylor, 1962**

Areng Valley: FMNH 267765, seasonally flooded lowland evergreen forest, 0342411 E 1286399 N, 180 m elev., 26 August 2004.

This single male (SVL 30.0) fully agrees with Taylor's (1962) original description. The specimen has the dorsal surface covered in whitish asperities; fingers about one-third webbed, the third finger disc about equal to the diameter of tympanum; whitish, velvety nuptial pad on the dorsal and medial surface of the first finger; the interorbital distance about equal to width of upper eyelid; and a dark ventral surface with light reticulations.

FIG. 5. *Acanthosaura crucigera*, Kampot.

The specimen was collected at night (2045 h) on a tree trunk 15 m from a river.

Stuart et al. (2006) reported the species from hilly eastern Cambodia. The type locality of Khao Sebab Mountain, Chantaburi Province, southeastern Thailand, is in the Thai Cardamom Mountains.

Agamidae

***Acanthosaura crucigera* Boulenger, 1885 (Fig. 5)**

Kampot: FMNH 263225, hill evergreen forest along Prek Kaoh Toch River, near 10°37′53″N 104°02′33″E, 1000 m elev., 7 May 2000. FMNH 263226. 263260–263262, hill evergreen forest along Prek Kaoh Toch River, near 10°37′19″N 104 02′52″E, 800–900 m elev., 10–14 May 2000. FMNH 263227, evergreen mixed with deciduous forest on plateau, near 10°38′33″N 104°01′33″E, 1000 m elev., 11 May 2000.

Knorgl Louk: FMNH 267742, evergreen forest, 0355451 E 1315930 N, 1220 m elev., 29 September 2004.

Chum Noab: FMNH 267731, disturbed lowland dry evergreen forest, 0343524 E 1286243 N, 200 m elev., 31 March 2004.

Thmar Baing: FMNH 263335, Tatai Leu, disturbed lowland dry evergreen forest, 0340909 E 1307725 N, 450 m elev., 30 January 2004.

Adults in this series (largest male SVL 123.9, largest female SVL 135.7) agree with Boulenger's (1885) original description of the species from "Tavoy," Myanmar, by having the spines in the nuchal crest longer than those in the dorsal crest; a distinct diastema between the nuchal and dorsal crests; length of spine at the posterior end of the supraciliary edge greater than eye diameter; a spine on the occiput about midway between the tympanum and nuchal crest; dark cruciform marking on nape, the lateral branches reaching throat; gular sac present, usually pigmented; and dark band from nostril to tympanum through eye. In life, the dorsum was greenish-yellow, with dark gray reticulations enclosing light yellow spots.

Despite the general agreement between the Cambodian specimens and the original description of *A. crucigera*, Boulenger (1885) referred a male specimen (no voucher number or size provided) collected by Mouhot from "Chartaboum" (= Chantaburi Province), southeastern Thailand, to *A. armata* (Gray, 1827; type locality Singapore). Chantaburi is in the Thai Cardamom Mountains, and we have examined a male specimen collected by Mouhot (BMNH 61.4.12.43) from "Chartaboum" that is conspecific with the Cambodian specimens. According to Boulenger (1885), *A. armata* primarily differs from *A. crucigera* by having 11–13 supralabials (9–10 in *crucigera*), 13–15 infralabials (9–10 in *crucigera*), the dorsal crest anteriorly as high as the nuchal crest (dorsal crest much lower than nuchal crest in *crucigera*), no dark band from nostril to tympanum through eye (present in *crucigera*), and an oblique dark band down each side of the neck, from the diastema between nuchal and dorsal crests to throat (dark cruciform marking on nape, the lateral branches reaching throat in *crucigera*). Smith (1935) considered them to be solely different subspecies (*Goniochephalus armatus armatus* and *G. a. crucigerus*) that differed primarily by the presence or absence of a gular sac (absent in *armatus*, present in *crucigerus*). The Cambodian specimens fit both authors' concepts of *A. crucigera* better than *A. armata*, except the number of supralabials (11–13) matches that given by Boulenger for *A. armata* and the number of infralabials (11–12) is intermediate between the two. Nonetheless, Boulenger's (1885) identification of the Chartaboum specimen as *A. armata* was probably in error. A taxonomic reevaluation of species boundaries in these lizards is warranted.

The specimens were collected during the day on leaf litter of the forest floor and on tree branches 0.5–2 m above the ground or at night sleeping on branches, vines, and fern fronds 0.5–1.5 m above the ground.

Smith (1935) reported the species (as *G. a. crucigerus*) to be "fairly common round Bokor (alt. 3,000 feet) in the Kamchay Mountains" (= Cambodian Cardamom Mountains).

***Calotes emma* Gray, 1845**

Thmar Baing: FMNH 263347–263348, disturbed lowland evergreen forest, near Russei Chrum River, 0315086 E 1322308 N, 400 m elev., 26–28 December 2003.

Chum Noab: FMNH 267745, disturbed lowland evergreen forest, 0344523 E 1286485 N, 200 m elev., 30 March 2004.

These have a spine at the posterior end of the supraciliary edge; a spine above the tympanum; a spine on the occiput about midway between the tympanum and nuchal crest; and an oblique skin fold in front of the shoulder containing small, granular, darkly pigmented scales.

The Thmar Baing specimens were collected during the day (1200–1400 h) on tree branches 1–1.5 m above the ground, 20–25 m from a river. The Chum Noab specimen was captured as bycatch in a small mammal mesh trap positioned 10 m above the ground on a tree branch and baited with banana.

Stuart et al. (2006) reported the species from hilly eastern Cambodia.

***Calotes mystaceus* Duméril & Bibron, 1837**

Phnom Sruoch: FMNH 262681–262684, grassland and open pine forest plateau, near 11°19′34″N 104°03′56″E, 700 m elev., 6 June 2000.

These have a spine above the tympanum; a spine on the occiput about midway between the tympanum and nuchal crest; no spine at the posterior end of the supraciliary edge; a deep oblique skin fold in front of the shoulder containing small, granular, darkly pigmented scales; a creamy-white (in preservative) stripe from the upper lip to above the shoulder; and one to three large orange-red dorsolateral spots irregularly outlined in creamy-white (in preservative).

All four specimens were collected during the day (1000–1100 h) on pine trees near buildings inside Kirirom National Park.

Stuart et al. (2006) reported the species from hilly eastern Cambodia.

***Draco maculatus* (Gray, 1845)**

Phnom Sruoch: FMNH 261837, grassland and open pine forest plateau, near 11°19′34″N 104°03′56″E, 700 m elev., 5 June 2000.

Thmar Baing: FMNH 263343, pine forest, 0358926 E 1289969 N, 780 m elev., 26 February 2004.

Chum Noab: FMNH 267758, disturbed lowland dry evergreen forest, 0344052 E 1286562 N, 200 m elev., 2 April 2004.

Two males (SVL 70.7–70.9) and a female (SVL 67.5) have the nostril directed laterally; a scaled tympanum; and a dorsolateral row of trihedral scales on the body. The patterns on the patagia are variable. Both males have narrow, longitudinal, dark stripes on the dorsal surface, with a few scattered dark spots in one male, and no distinct markings on the ventral surface. The female has a heavily mottled dorsal surface and large black spots on the ventral surface.

FMNH 261837 and 263343 were collected during the day (1100–1200 h) on the trunks of pine trees. FMNH 267758 was collected during the day in a pitfall trap 8 m from the shores of a lake.

Smith (1935) reported the species from Cambodia, without specific localities.

***Draco taeniopterus* Günther, 1861**

Thmar Baing: FMNH 263336, hill evergreen forest, 0358926 E 1289969 N, 800 m elev., 1 March 2004.

A single male (SVL 72.5) has the nostril directed upward; a naked tympanum; and five, nonbifurcating, black transverse bands on the dorsal surface of the patagium. In life, the dewlap and ventral surface of patagium was yellow, and the posterior gular region between the throat lappets was red.

The specimen was collected on a hilltop ridge at night (2000 h) sleeping on a palm 2 m above the ground, 2 m from a small stream.

This is the first report of the species from Cambodia. The type locality of "Chantabun" (= Chantaburi Province), southeastern Thailand, is in the Thai Cardamom Mountains.

***Physignathus cocincinus* Cuvier, 1829**

Phnom Sruoch: FMNH 262672, evergreen mixed with deciduous forest, February 2000. FMNH 262673, disturbed evergreen mixed with deciduous and bamboo forest along O Krang Snoul Stream, near 11°22′00″N 104°06′28″E, 300–400 m elev., 5 June 2000.

Areng Valley: FMNH 267746, seasonally flooded lowland evergreen forest, 0342411 E 1286399 N, 190 m elev., 30 August 2004.

A juvenile and two subadults have mostly green coloration, with two or three oblique, light blue body bands between the axilla and groin visible in preservative; strongly compressed tails, heavily keeled below; and nuchal, dorsal, and caudal crests, weakly visible in the juvenile. The larger subadult is male and has eight femoral pores on each side. In life, the body bands of the juvenile were light brown.

FMNH 262673 was sleeping at night on a tree branch 1.5 m above a swift channel at the top of a waterfall. FMNH 267746 was sleeping at night (2030 h) on a palm frond 1 m above the ground, 5 m from a river.

Tirant (1885) reported the species from Cambodia, without specific localities, and Stuart et al. (2006) reported the species from hilly eastern Cambodia.

Lacertidae

***Takydromus sexlineatus* Daudin, 1802**

Phnom Sruoch: FMNH 261855, grassland with open pine forest plateau, near 11°19′34″N 104°03′56″E, 700 m elev., 7 June 2000.

Sre Ambel: FMNH 261867–261869, deciduous dipterocarp forest with grassland, near 11°27′10″N 103°44′43″E, <10 m elev., 23 August 2000.

Thmar Baing: FMNH 263375–263376, pine forest with grassland, 0361901 E 1291813 N, 850 m elev., 20–26 February 2004.

Veal Sre Prang: FMNH 267741, upland grassland plateau, 0314350 E 1349201 N, 540 m elev., 8 December 2004.

These have a single femoral pore; four strongly keeled dorsal plates across the middle of the back, the keels forming continuous lines; keeled head shields; and no ocellate spots on flank. Five specimens with complete tails have tail length 3.28–4.79 (median 4.59, N = 5) times the SVL.

The specimens were collected during the day (1000–1500 h) in tall grass.

Stuart et al. (2006) reported the species from hilly eastern Cambodia.

Scincidae

***Dasia olivacea* Gray, 1838 (Fig. 6)**

Chum Noab: FMNH 267744, lowland dry evergreen forest, 0344446 E 1286848 N, 200 m elev., 24 March 2004.

FIG. 6. *Dasia olivacea*, Thmar Baing.

A single specimen (SVL 86.7) agrees with Inger and Brown's (1980) diagnosis of the species by having dorsal scales with three weak keels; supranasals separated; 28 midbody scale rows; 53 ventrals counted in midline from mental to vent; and a light, continuous dorsolateral streak beginning in the lumbar area and extending onto the tail.

The specimen was collected during the day (1400 h) on a tree 25 m from a river.

This is the first report of the species from Cambodia.

***Lipinia vittigera* (Boulenger, 1894)**

Phnom Sruoch: FMNH 261861–261862, grassland with open pine forest, near 11°19′34″N 104°03′56″E, 700 m elev., 5–6 June 2000.

Thmar Baing: FMNH 263361, disturbed gallery forest along Russei Chrum River, 0315086 E 1322308 N, 400 m elev., 28 December 2003. FMNH 263362, disturbed lowland dry evergreen forest along Russei Chrum River, 0316200 E 1322310 N, 420 m elev., 30 December 2003. FMNH 263363, Tatai Leu, disturbed lowland dry evergreen forest, 0340962 E 1307727 N, 440 m elev., 27 January 2004. FMNH 263364, disturbed lowland dry evergreen forest along Russei Chrum River, 0314518 E 1322242 N, 400 m elev., 24 December 2003.

Chum Noab: FMNH 267740, disturbed lowland dry evergreen forest, 0344052 E 1286562 N, 200 m elev., 31 March 2004.

These have an acutely pointed snout nearly twice the diameter of the eye; three distinct light-colored (creamy pink or gold in life) longitudinal stripes across the back consisting of a vertebral stripe from the snout tip to tail and a dorsolateral stripe from above the eye to tail; and a black stripe flanking each light-colored stripe. In life, the tail was bright orange or red.

The Phnom Sruoch specimens were collected during the day (1200–1400 h) on woodpiles near a building. The Chum Noab and three Thmar Baing specimens were collected during the day in pitfall traps. One Thmar Baing specimen was collected during the day (1500 h) in a tree 1.5 m above the ground, 15 m from a river.

Stuart et al. (2006) reported the species from hilly eastern Cambodia.

***Lygosoma bowringii* (Günther, 1864)**

Phnom Sruoch: FMNH 261839, grassland with open pine forest plateau, near 11°20′29″N 104°02′25″E, 700 m elev., 6 June 2000.

Chum Noab: FMNH 267748–267749 lowland dry evergreen forest, 0344052 E 1286562 N, 200 m elev., 26–27 March 2004. FMNH 267750, grassland and disturbed lowland dry evergreen forest, 0344515 E 1287059 N, 200 m elev., 2 April 2004.

These agree with Günther's (1864) original description and Smith's (1935) expanded description by having the adpressed limbs not touching; 26–28 longitudinal scale rows at midbody; lower eyelid scaly; supranasals in contact, separating rostral from the single prefrontal; pair of frontoparietals; pair of nuchals; third toe slightly shorter than fourth; coloration brown above, with dark spot on each dorsal scale forming continuous longitudinal lines on back; and a dark dorsolateral stripe.

The Phnom Sruoch specimen was collected at night (1830 h) under a log. The Chum Noab specimens were collected in pitfall traps.

This is the first report of the species from Cambodia.

***Sphenomorphus melanosticta* (Boulenger, 1887b)**

Sre Ambel: FMNH 261871, Phnom Chan Mountain, evergreen mixed with deciduous forest, 11°26′30″N 103°47′00″E, 100–200 m elev., 25 August 2000.

Thmar Baing: FMNH 263359, hill evergreen forest, 0359705 E 1290390 N, 820 m elev., 24 February 2004. FMNH 263360, hill evergreen forest, 0360005 E 1290500 N, 830 m elev., 26

February 2004. FMNH 263371–263373, disturbed lowland dry evergreen forest along Russei Chrum River, 0314518 E 1322242 N, 400 m elev., 24 December 2003. FMNH 263374, disturbed lowland dry evergreen forest along Russei Chrum River, 0314100 E 1322150 N, 410 m elev., 28 December 2003.

These agree with Boulenger's (1887b) original description and Smith's (1935) expanded description by having the adpressed limbs slightly overlapping; dorsal and lateral scales about equal in size; no enlarged nuchals; 36 longitudinal scale rows at midbody; coloration in life and preservative golden brown above, with black spots scattered on dorsal scales; and a broken, black dorsolateral stripe. In life, the side of head was orange or pink, and the venter was white or yellow.

The Sre Ambel specimen was collected at night (1900 h) less than 1 m from a small stream. The Thmar Baing specimens were collected in pitfall traps.

This is the first report of the species from Cambodia.

***Sphenomorphus maculatus* (Blyth, 1853)**

Kampot: FMNH 261863, disturbed evergreen and bamboo forest along O Taron Trao Stream, near 10°40′49″N 104°06′01″E, 220–300 m elev., 15 May 2000.

Phnom Sruoch: FMNH 261864, evergreen forest, 400 m elev., 17 February 2000.

Thmar Baing: FMNH 263337, Tatai Leu, disturbed lowland dry evergreen forest, 0340090 E 1306993 N, 350 m elev., 26 January 2004. FMNH 263365, Tatai Leu, disturbed lowland dry evergreen forest, 0340445 E 1307223 N, 410 m elev., 30 January 2004. FMNH 263366, Tatai Leu, disturbed lowland dry evergreen forest, 0341440 E 1307447 N, 420 m elev., 29 January 2004. FMNH 263369, Tatai Leu, disturbed lowland dry evergreen forest, 0340090 E 1306993 N, 360 m elev., 26 January 2004. FMNH 263353, disturbed gallery evergreen forest along Russei Chrum River, 0313880 E 1321887 N, 400 m elev., 25 December 2003. FMNH 263354, disturbed lowland dry evergreen forest along Russei Chrum River, 0314100 E 1322150 N, 410 m elev., 26 December 2003. FMNH 263367–263368, disturbed gallery evergreen forest along Russei Chrum River, 0314518 E 1322242 N, 400 m elev., 24–26 December 2003.

Areng Valley: FMNH 263370, pine forest, 0358926 E 1289969 N, 800 m elev., 24 February 2004.

These have the adpressed limbs overlapping; a concave rostral scale; all scales smooth; scales on dorsum larger than those on side; widened subcaudals; coloration in life and preservative bronze above, with two median series of black spots on back; black lateral band from tip of snout to tail, becoming lighter with jagged margin on tail; and white flank with black speckling. The largest (FMNH 263365) has SVL 67.1.

The specimens were collected on leaf litter, usually close to streams or rivers.

Taylor (1963) reported the species from Cambodia, without specific localities, and Stuart et al. (2006) reported it from hilly eastern Cambodia.

***Sphenomorphus rufocaudatus* Darevsky & Nguyen, 1983**

Thmar Baing: FMNH 263355, Tatai Leu, disturbed lowland dry evergreen forest, 0340167 E 1307099 N, 400 m elev., 26 January 2004. FMNH 263356, Tatai Leu, disturbed lowland dry evergreen forest, 0341440 E 1307447 N, 420 m elev., 29 January 2004. FMNH 263357–263358, Tatai Leu, disturbed lowland dry evergreen forest, 0339935 E 1306680 N, 400 m elev., 26 January 2004.

Four specimens generally agree with Darevksy and Nguyen's (1983) original description and topotypes from Gia Lai Province, Vietnam (FMNH 252341–252362), which we have examined. These have the adpressed limbs slightly overlapping; 31–33 longitudinal scale rows at midbody; one row of weakly developed nuchals; two enlarged preanals; coloration in life and preservative brown above with a narrow, mostly continuous, black dorsolateral stripe; and a reddish tail in life. Three specimens have small, scattered black spots on the midline of the body. Darevsky and Nguyen (1983) diagnosed the species as having the prefrontals usually separated, but some topotypes that we examined and the Thmar Baing specimens have the prefrontals in broad contact.

Stuart et al. (2006) reported the species from hilly eastern Cambodia.

***Sphenomorphus stellatum* (Boulenger, 1900) (Fig. 7)**

Chum Noab: FMNH 267739, lowland dry evergreen forest, 0344052 E 1286562 N, 200 m elev., 30 March 2004.

A single specimen agrees with Boulenger's (1900) original description and Taylor's (1963) expanded description by having the adpressed limbs overlapping; convex rostral; 22 longitudinal scale rows at midbody; two vertebral scale

FIG. 7. *Sphenomorphus stellatum* (FMNH 267739), Chum Noab.

rows wider than remaining dorsal scales; pair of enlarged preanal scales; bronze-brown coloration above, with scattered, light-colored spots; black spots forming vertebral and dorsolateral longitudinal stripes on body; black spots on upper and lower lips; and tail lighter in coloration than body, with narrow, transverse, black bands not connecting ventrally.

The specimen was collected in a pitfall trap 8 m from a lake.

This is the first report of the species from Cambodia.

Gekkonidae

***Cyrtodactylus intermedius* (Smith, 1917) (Fig. 8)**

Kampot: FMNH 263228–263231, grassland with heath forest and sandstone outcrops, 10°37′35″N 104°01′30″E, 1000 m elev., 5–6 May 2000. FMNH 263232, 263234, hill evergreen forest along Prek Kaoh Toch River, near 10°37′53″N 104°02′33″E, 900–1000 m elev., 7–12 May 2000. FMNH 263233, 263235–263236, hill evergreen forest along Prek Kaoh Toch River, near 10°37′19″N 104°02′52″E, 800–900 m elev., 10–14 May 2000. FMNH 263237, disturbed evergreen and bamboo along O Taron Trao Stream, near 10°40′49″N 104°06′01″E, 220–300 m elev., 15 May 2000.

FIG. 8. *Cyrtodactylus intermedius*, Kampot.

Phnom Sruoch: FMNH 263238–263240, evergreen mixed with deciduous forest along O Tasek Stream, near 11°18′39″N 104°04′42″E, 500–600 m elev., 4 June 2000. FMNH 263241, disturbed evergreen mixed with deciduous and bamboo forest along O Krang Snoul Stream, near 11°22′00″N 104°06′28″E, 300–400 m elev., 5 June 2000. FMNH 263242, disturbed evergreen mixed with deciduous forest near old dam, near 11°21′30″N 104°02′11″E, 600 m elev., 6 June 2000. FMNH 263243, evergreen mixed with deciduous forest along O Teuk Chenh Stream, 11°18′34″N 104°04′55″E, 4 November 2000.

Thmar Baing: FMNH 263344, hill evergreen forest, 0359705 E 1290390 N, 820 m elev., 28 February 2004. FMNH 263345, disturbed lowland dry evergreen forest along Russei Chrum River, 0316200 E 1322310 N, 420 m elev., 31 December 2003. FMNH 263346, Tatai Leu, disturbed lowland dry evergreen forest, 0339935 E 1306680 N, 430 m elev., 27 January 2004.

A large series agrees with Smith's (1917) original description and Taylor's (1963) expanded description by having males with 7–10 preanal pores, not interrupted medially; males with a group of enlarged preanal scales; males with a series of 6–10 enlarged femoral scales but no femoral pores; distinct ventrolateral fold; cream-edged, dark brown, U-shaped band from eye to occiput; and four brown bands across dorsal surface of body.

The species was frequently encountered at night inside and outside of forest, usually on large boulders and trees near to swift, rocky streams. As notable exceptions, FMNH 263228–263230 were on vertical walls of a reservoir

culvert, and FMNH 263231 was on an exposed piece of sandstone in grassland near a road.

Smith (1935) reported the species from the "Kamchay" (= Cambodian Cardamom) Mountains. The type locality of Khao Sebab Mountain, Chantaburi Province, southeastern Thailand, is in the Thai Cardamom Mountains.

***Ptychozoon lionotum* Annandale, 1905**

Phnom Sruoch: FMNH 261851–261854, grassland and open pine forest plateau, near 11°19′34″N 104°03′56″E, 700 m elev., 3–5 June and 5 November 2000.

An adult male (SVL 89.0), two adult females (SVL 89.5–98.2), and an immature specimen have four dark transverse bands between the axilla and groin; a predigital notch in the preantebrachial cutaneous expansion; 20–22 denticulate tail lobes (in those with complete tails); and tail terminus with crenulated margin (in those with complete tails). The male has 21 preanal pores. The specimens lack enlarged midvertebral tubercles on the body, but one female (FMNH 261854) has enlarged tubercles on the midline of the dorsal surface of the tail.

These were collected during the day (1400–1630 h) on an exterior wall and on a large tree branch abutting the exterior wall of a restaurant inside Kirirom National Park.

This is the first report of the species from Cambodia. The similar *P. trinotaterra* Brown, 1999, from eastern Thailand and southern Vietnam is expected in Cambodia but has not yet been discovered there.

Typhlopidae

***Typhlops muelleri* Schlegel, 1839**

Phnom Sruoch: FMNH 259200, grassland with open pine forest plateau, near 11°19′53″N 104°04′53″E, 700 m elev., 4 June 2000.

A single specimen agrees with Wallach's (2001) diagnosis of the species by having 24 longitudinal scale rows at midbody, reducing to 22 posteriorly; distinct eye with pupil; preocular separate from nasal; inferior nasal suture contacting second supralabial; tail terminating in small spine; and coloration in preservative dark brown above, ivory below, with a sharp demarcation between the two colors.

The specimen was collected at night (1915 h) crawling on the surface of hard soil.

Bourret (1936) reported the species from Cambodia as *T. diardi nigroalbus*, without specific localities.

Xenopeltidae

***Xenopeltis unicolor* Reinwart *in* Boie, 1827**

Thmar Baing: FMNH 263379, Tatai Leu, disturbed lowland evergreen forest, 0341440 E 1307447 N, 420 m elev., 31 January 2004.

A single juvenile has smooth, highly iridescent scales; 15 longitudinal scale rows at midbody; wedge-shaped head, indistinct from neck; creamy-white band on back of head; brown dorsal scales, second through fifth rows edged in creamy-white; and creamy-white ventral scales, with brown flecking on subcaudals.

The specimen was collected in a pitfall trap 20 m from a river after heavy rainfall.

Saint Girons (1972) reported the species from several localities in the lowlands of central Cambodia, and Stuart et al. (2006) reported it from hilly eastern Cambodia.

Colubridae

***Ahaetulla prasina* (Reinwardt *in* Boie, 1827)**

Areng Valley; FMNH 267725, Chamna, lowland evergreen forest, 0353659 E 1301529 N, 200 m elev., 6 November 2004.

A single specimen with a gray color phase has an elongated snout, length about two times eye diameter; rostral scale upturned, slightly projecting, but not as a nasal appendage; black markings on dorsal scale edges forming oblique lines anteriorly; and a uniform dark gray venter in preservative.

The specimen was found dead on a path, probably killed by a person.

Saint Girons (1972) reported the species from the Cambodian Cardamom Mountains, and both Saint Girons (1972) and Stuart et al. (2006) reported it from hilly eastern Cambodia.

***Amphiesma khasiense* (Boulenger, 1890a)**

Thmar Baing: FMNH 263388, hill evergreen forest, 0361050 E 1290990 N, 700 m elev., 27 February 2004.

A single specimen agrees with Boulenger's (1890a) original description of the species from "Khási Hills," Assam, except that it has 160 ventrals (150–154 in the type series), and the light-colored nuchal stripe arises from posterior margin of the eye (from the supralabials in the type series). Otherwise, the specimen has slender habitus; 19 longitudinal scale rows at midbody, first row smooth anteriorly, becoming keeled posteriorly, remaining rows keeled throughout; suture between the internasals equal in length to the suture between the prefrontals; frontal longer

than its distance from the snout tip, shorter than parietals; square loreal; two preoculars; three postoculars; nine supralabials, the fourth, fifth, and sixth touching the orbit; anterior chin shields in contact with first five infralabials, shorter than posterior chin shields; coloration of top of head dark red in life, reddish brown in preservative, with scattered, yellowish (in preservative) markings; coloration of dorsum dark olive green in life, brown in preservative, with a series of cream (in life and preservative) dorsolateral spots; and coloration of venter white (in life and preservative) with dark spots on outer margin of ventrals. The tail tip is broken, and so the number of subcaudals is unknown.

The specimen was collected during the day (1400 h) on a rocky bank 1 m from a stream.

Smith (1943) reported the species (as *Natrix modesta*) from the "Kamchay" (= Cambodian Cardamom) Mountains.

***Amphiesma stolatum* (Linnaeus, 1758)**

Veal Sre Prang: FMNH 267727, grassland surrounded by evergreen forest on plateau, 0316438 E 1348762 N, 560 m elev., 7 December 2004.

A single specimen has 19 longitudinal scale rows at midbody, first row smooth, other rows keeled; 154 ventrals, outer margin extending onto sides and with a distinct black spot; 53 subcaudals; and coloration in preservative dark brown above with scattered black spots and creamy dorsolateral stripe.

The specimen was found during the day (1100 h) in a hole sloughing its skin, 30 m from a marsh.

Saint Girons (1972) reported the species from central Cambodia.

***Boiga cyanea* (Duméril, Bibron & Duméril, 1854)**

Phnom Sruoch: FMNH 259178, disturbed evergreen mixed with bamboo forest along O Krang Snoul Stream, near 11°22′00″N 104°06′28″E, 300–400 m elev., 5 June 2000.

A single female has eight supralabials; 11 infralabials; one preocular; two postoculars; 21 longitudinal scale rows at midbody; enlarged vertebral scales; 242 ventral scale rows; and 125 paired subcaudal scale rows. In life, the upperparts were green.

The specimen was collected at night (2020 h) in a tree 2 m above a stream.

Saint Girons (1972) reported the species from central Cambodia and Kirirom in the Cambodian Cardamom Mountains, and Stuart et al. (2006) reported it from hilly eastern Cambodia.

***Boiga dendrophila* (Boie, 1827)**

Sre Ambel: FMNH 259164, mangrove and melaleuca forest at mouth of Prek Kroch River (tributary of Prek Sre Ambel), 11°06′20″N 103°39′35″E, <10 m elev., 27 August 2000.

Areng Valley: FMNH 267723, riparian evergreen forest, 0342411 E 1286399 N, 170 m elev., 31 August 2004.

A male from Areng Valley (SVL 1145) and a female from Sre Ambel (SVL 1125) have a compressed body, triangular in cross section; 21 longitudinal scale rows at midbody; glossy black body with 35–44 narrow, bright yellow (in life) lateral bars reaching ventrals but not crossing venter as bands; bright yellow (in life) chin, throat, and labials, the labials edged in black; 209–220 ventrals; and 83–93 subcaudals.

The Sre Ambel specimen was swimming in a river at dusk (1830 h) at the edge of a rice paddy in a mangrove clearing. The Areng Valley specimen was collected during the day (0930 h) in a tree 3 m above a river.

This is the first report of the species from Cambodia.

***Boiga multomaculata* (Boie, 1827)**

Phnom Sruoch: FMNH 259194, grassland and open pine forest plateau, near 11°19′14″N 104°04′56″E, 700 m elev., 3 June 2000.

A single male has eight supralabials, the third, fourth, and fifth touching the orbit; enlarged vertebrals; 19 longitudinal scale rows at midbody; 224 ventrals; 96 subcaudals; a dark brown, inverted V-shaped marking on top of head; dorsolateral series of large, oval, dark brown, light-edged spots, the first being on the occiput; a lateral series of irregular, smaller spots; and a dark brown streak posterior to the eye.

The specimen was collected at dusk (1840 h) crawling on a grass clump 0.5 m above a flowing seep.

This is the first report of the species from Cambodia.

***Boiga siamensis* Nootpand, 1971**

Chum Noab: FMNH 267726, road through disturbed lowland dry evergreen forest, 0334393 E 1287170 N, 250 m elev., 30 March 2004.

A single female agrees with the neotype male (FMNH 191997) from Nakhon Ratchasima Province, eastern Thailand, designated by Pauwels et al. (2005), which we have examined. The

Cambodian female also agrees with Kroon's (1973) original description of *B. ocellata*, a junior synonym of *B. siamensis* according to Pauwels et al. (2005). The specimen has eight supralabials, the third, fourth, and fifth touching the orbit; one preocular, visible from above and not touching the frontal; two postoculars; two anterior temporals; enlarged vertebrals; 23 longitudinal scale rows at midbody; 263 ventrals; and 137 subcaudals. The number of subcaudals is slightly more than Kroon (1973) reported in a series from Thailand (116–129).

The specimen was killed on a road by a vehicle.

This is the second known specimen from Cambodia. Bourret (1934) reported on a single specimen [as *B. cynodon* (Boie, 1827)] sent to him from Phnom Penh, but he did not provide the original collecting locality.

***Chrysopelea ornata* (Shaw, 1802)**

Phnom Sruoch: FMNH 259184, grassland with open pine forest plateau, near 11°19′34″N 104°03′56″E, 700 m elev., 4 June 2000.

A female has the internasals shorter than prefrontals; bell-shaped frontal; one preocular; two postoculars; nine supralabials, fifth and sixth touching the orbit; last ventral and anal scale divided; 225 ventrals; 126 subcaudals; top of head in life black with yellowish-green crossbars and spots; and body scales in life green with black margin and median line.

The specimen was killed by a local resident on the wall of a building.

Saint Girons (1972) reported the species from several localities across Cambodia.

***Dryocalamus davisonii* (Blanford, 1878)**

Kampot: FMNH 259203, heath forest with grassland and sandstone outcrops, near 10°37′35″N 104°01′30″E, 1000 m elev., 7 May 2000.

Thmar Baing: FMNH 263389, hill evergreen mixed with pine forest, 0359669 E 1289886 N, 760 m elev., 24 February 2004.

These have 13 smooth longitudinal scale rows at midbody; no preocular, loreal in broad contact with eye; one postocular; coloration in life white with 29–31 black saddles on body, saddles elongated anteriorly, shortened posteriorly; and 19–21 black spots on tail.

The Kampot specimen was collected at night (2200 h) climbing the vertical face of a sandstone outcrop 3 m above the ground. The Thmar Baing specimen was collected at night (2000 h) on a tree trunk 2 m above the ground 75 m from a stream.

Saint Girons (1972) reported a single specimen from Phnom Penh.

***Enhydris bocourti* (Jan, 1865)**

Areng Valley: FMNH 267721, seasonally flooded lowland evergreen forest, 0342411 E 1286399 N, 190 m elev., 28 August 2004.

A subadult male has stout habitus; 27 smooth longitudinal scale rows at midbody; seven supralabials, fourth touching the orbit, last horizontally divided; 132 ventrals; and coloration in life dark brown with yellowish-brown transverse bands on back, dark coloration on back tapering into vertical bars on sides that reach yellow venter.

The specimen was collected during the day (1400 h) inside a wet, rotten log 5 m from a swamp.

Bourret (1934) reported the species from Kampot, Saint Girons (1972) from lowland localities throughout Cambodia, and Stuart et al. (2000) from Tonle Sap Great Lake.

***Gonyosoma oxycephalum* (Boie, 1827)**

Chum Noab: FMNH 267724, disturbed lowland dry evergreen forest 0334393 E 1287170 N, 250 m elev., 30 March 2004.

A single female (SVL 1060) has a compressed body; elongated snout, length about 2.5 times length of eye diameter; nine supralabials, the ninth elongated; 240 ventrals, extending to side of body; upperparts dark green (in life), some posterior body scales with white ventral margins; venter light green (in life); and tail scales red (in life) with black anterior margins, becoming darker posteriorly.

The specimen was killed on a road by a vehicle.

Tirant (1885) reported the species from Cambodia, without specific localities. Saint Girons (1972) reported a single specimen from Angkor in central Cambodia.

***Homalopsis buccata* (Linnaeus, 1758)**

Sre Ambel: FMNH 259301, Prek Sre Ambel River, Chaouethail Plous Village, 11°18′03″N 103°44′56″E, 22 August 2000.

Thmar Baing: FMNH 263383, Russei Chrum River, 0315086 E 1322308 N, 400 m elev., 23 December 2003. FMNH 263384, Stoeng Tatai River, 0340445 E 1307223 N, 410 m elev., 23 January 2004.

A large female (SVL 870), a subadult, and a juvenile have 41–44 keeled longitudinal scale rows at midbody; one preocular; one or two

suboculars; two postoculars; several posterior supralabials horizontally divided; 152–159 ventrals; black triangular spot on tip of snout; dark oblique stripe from snout to rear of jaw, passing through eye; juvenile in preservative with broad reddish-brown bands on dorsum alternating with narrow yellowish-brown bands, larger specimens in preservative with duller, less distinct dorsal banding; and venter in preservative creamy with dark spot on outer margin of every three to five scales anteriorly, becoming heavily speckled with dark brown or black posteriorly.

Saint Girons (1972) noted that a juvenile female from Kirirom in the Cambodian Cardamom Mountains differed from specimens from Trapeang Chan in the central plain of Cambodia by having 43 longitudinal scale rows at midbody (45 in those from Trapeang Chan) and 162 ventrals (169–176 in those from Trapeang Chan). In these characters, our specimens are closer to Saint Girons's (1972) Kirirom specimen than to his Trapeang Chan specimens, but there is variation. A study on the geographic variation in *H. buccata* across its range is warranted.

The subadult (FMNH 263383) was collected in the morning (0940 h) in 20 cm of water at the edge of a 30-m-wide, slow-moving river. The juvenile (FMNH 263384) was collected at night (2045 h) in leaf litter on a river bottom. The adult female (FMNH 259301) was obtained from a fisherman who caught it in the Prek Sre Ambel River, and it contained a large fish of the genus *Channa* (B. Sidlauskas, pers. comm.) in its stomach.

Bourret (1934) reported the species from Kampot and Kompong Luang; Saint Girons (1972) from Kirirom, Phnom Penh, and Trapeang Chan; and Stuart et al. (2000) from Tonle Sap Great Lake.

***Oligodon fasciolatus* (Günther, 1864)**

Areng Valley: FMNH 267730, lowland evergreen forest, 0353155 E 1300116 N, 260 m elev., 6 November 2004.

A single female agrees with Günther's (1864) original description and Wagner's (1975) expanded description by having 21 longitudinal scale rows at midbody; internasals present; eight supralabials, fourth and fifth touching orbit; 176 ventrals; 40 subcaudals; undivided anal scale; and immaculate white venter. The specimen has the reticulated dorsal color pattern illustrated by Wagner (1975, fig. 14).

The specimen was killed by a local resident on a path.

Saint Girons (1972) reported the species as a junior synonym of *O. cyclurus* (Cantor, 1839) from Kirirom in the Cambodian Cardamom Mountains and from Angkor in central Cambodia.

***Oligodon inornatus* (Boulenger, 1914)**

Thmar Baing: FMNH 263391, disturbed lowland dry evergreen forest along Russei Chrum River, 0314518 E 1322242 N, 400 m elev., 28 December 2003.

A single juvenile agrees with Boulenger's (1914) original description and Smith and Kloss's (1915) and Wagner's (1975) expanded descriptions by having 15 smooth, longitudinal scale rows throughout the body; nasal divided; portion of rostral seen from above equal to its distance from frontal; internasals present; eight supralabials, fourth and fifth touching orbit; one preocular; two postoculars; 174 ventrals; 36 subcaudals; and an undivided anal scale.

The head pattern and ventral coloration of the Thmar Baing specimen closely matches that of a specimen reported by Smith and Kloss (1915) from Koh Kut Island, southeastern Thailand, just offshore of the Cardamom Mountains. The upper side of the head has dark brown outlined in black markings consisting of a crossband passing through eye to fifth and sixth supralabials; spot on frontal; oblique bar from parietal to side of neck; and an inverted V-shaped marking from frontal to nape. The venter was pink in life (pinkish-yellow in preservative) with a series of black, rectangular spots on the outer margin of approximately every second or third ventral. The dorsal pattern differs from that reported by Boulenger (1914), Smith and Kloss (1915), Smith (1943), and Wagner (1975), but other species allied to *O. cinereus* (Günther, 1864) are known to exhibit intraspecific variation in color patterns (Smith, 1943; Wagner, 1975). The dorsum of the Thmar Baing specimen was purple in life (brown in preservative) with a vertebral series of paired, red-in-life (light orange in preservative) spots outlined in black.

The specimen was collected in a pitfall trap within 100 m of a river.

Smith (1943) reported the species (as a junior synonym of *O. cinereus*) from Cambodia but without specific localities.

***Pareas carinatus* (Boie, 1828)**

Kampot: FMNH 259218, 1060 m elev., 30 July 2000.

Chum Noab: FMNH 267728, lowland dry evergreen forest, 0344446 E 1286848 N, 200 m elev., 23 March 2004.
Thmar Baing: FMNH 267729, lowland evergreen forest, 0348616 E 1292411 N, 170 m elev., 7 November 2004.

Two adults and a juvenile agree with Smith's (1943) expanded description, except that the vertebral scales are only weakly enlarged. Otherwise, these have smooth scales; the head distinct from neck; body strongly compressed; vertical eye diameter much greater than the distance from the ventral edge of eye to ventral edge of upper lip; frontal longer than parietal; prefrontal not touching orbit; reddish-brown (in life) coloration with narrow, transverse black bars; dark line from eye to nape; dark line from eye to corner of mouth; and black speckling on top of head. Bourret (1934) described the variety *unicolor* from nearby Kampong Speu Province, Cambodia, based on a single specimen having uniform, reddish-brown coloration without any darker markings on head or body, but this is probably just a color morph.

The Chum Noab specimen was collected at night (1930 h) on a tree branch 25 m from a river.

In addition to Bourret's (1934) report from Kampong Speu Province, Saint Girons (1972) reported the species from "Tuk Sap" in the coastal Cambodian Cardamom Mountains and from central Cambodia.

***Pareas margaritophorus* (Jan, 1866)**
Chum Noab: FMNH 267738, grassland and disturbed lowland dry evergreen forest, 0344515 E 1287059 N, 200 m elev., 1 April 2004.

A single specimen has smooth scales; the head distinct from neck; body not strongly compressed; vertical eye diameter slightly greater than the distance from the ventral edge of eye to ventral edge of upper lip; vertebral scales not enlarged; gray dorsum with lateral, transverse bars comprised of black scales with a white spot on the anterior part of scale; and underparts whitish with black speckling.

The specimen was collected in a pitfall trap 15 m from a river.

Stuart et al. (2006) reported the species from hilly eastern Cambodia.

***Psammodynastes pulverulentus* (Boie, 1827)**
Thmar Baing: FMNH 263380, disturbed lowland dry evergreen forest along Russei Chrum River, 0315086 E 1322308 N, 500 m elev., 2 February 2004.

A single specimen agrees with Smith's (1943) expanded description of the species by having two enlarged, fang-like teeth anteriorly; a short snout, truncate in profile; internasals much smaller than prefrontals; narrow, elongate, bell-shaped frontal; one preocular forming part of the canthus rostralis; two postoculars; eight supralabials, third, fourth, and fifth touching the orbit; and enlarged fourth infralabial.

The specimen was collected during the day (1200 h) on leaf litter.

Saint Girons (1972) reported the species from central Cambodia and the Cambodian Cardamom Mountains.

***Rhabdophis chrysargos* (Schlegel, 1837)**
Thmar Baing: FMNH 263381, disturbed lowland dry evergreen forest along Russei Chrum River, 0315244 E 1322732 N, 420 m elev., 25 December 2003. FMNH 263382, hill evergreen forest, 0362100 E 1291850 N, 850 m elev., 27 February 2004.

These have an olive-brown dorsum with short, yellowish, lateral, transverse bars connected across the vertebrals by black bars; white upper lip with black triangular-shaped markings pointing downward, white lip stripe extending posteriorly to form a weak, white, chevron-shaped marking on base of neck; white venter with a black spot at the outer margin of ventrals and subcaudals; nine supralabials, fourth, fifth and six touching the orbit; three postoculars; and two anterior temporals.

The specimens were collected during the day (1300–1660 h) on leaf litter in the forest.

Saint Girons (1972) reported the species from Kirirom in the Cambodian Cardamom Mountains, and Stuart et al. (2006) reported it from hilly eastern Cambodia.

***Rhabdophis nigrocinctus* (Blyth, 1856)**
Thmar Baing: FMNH 263385, disturbed gallery forest along Russei Chrum River, 0313880 E 1321887 N, 400 m elev., 27 December 2003.

A single specimen agrees with Smith's (1943) expanded description of the species by having 19 longitudinal scale rows at midbody, first row smooth, other rows keeled; olive-green (in life) coloration anteriorly, brown posteriorly; white lips with two black oblique stripes, one below eye, one from posterior margin of eye to corner of mouth; and uniform white venter. In agree-

ment with individuals from southeastern Thailand reported by Smith (1943), the Thmar Baing specimen has two preoculars, 159 ventrals, and no dark crossbars on body.

The specimen was collected in the morning (0940 h) on a leaf litter riverbank 3 m from the water.

This is the first report of the species from Cambodia.

***Xenochrophis trianguligerus* (Boie, 1827)**

Thmar Baing: FMNH 263378, Tatai Leu, disturbed lowland dry evergreen forest, 0328000 E 1291000 N, 380 m elev., 28 January 2004. FMNH 263390, Russei Chrum River, 0313880 E 1321887 N, 390 m elev., 30 December 2003.

Two subadults fully agree with Smith's (1943) expanded description of the species. These have 19 longitudinal scale rows at midbody, first row smooth, other rows keeled; internasals slightly narrowed anteriorly; one large preocular; two anterior temporals; nine supralabials, fourth, fifth, and sixth touching the orbit; 138–140 ventrals; 84–86 subcaudals; olive-brown dorsum with scattered, small black spots and dorsolateral series of small light spots; and pink (in life) sides with large, black bands, the points of which extend across a light yellow (in life) venter.

FMNH 263378 was collected in a grassy area 5 m from a river. FMNH 263390 was collected in the morning (1000 h) swimming in a river.

This is the first report of the species from Cambodia.

Viperidae

***Calloselasma rhodostoma* (Boie, 1827)**

Areng Valley: FMNH 267722, seasonally flooded lowland evergreen forest, 0342411 E 1286399 N, 190 m elev., 29 August 2004.

An adult female (SVL 740) has stocky habitus; 21 smooth, longitudinal scale rows at midbody; two prefrontals; two internasals; side and top of head dark brown, with light brown stripe from tip of snout, above eye, to rear of jaw; brown dorsum with alternating, triangular-shaped dark brown markings; and cream venter, heavily powdered with brown.

The specimen was collected during the day (1100 h) on leaf litter 15 m from a swamp.

Saint Girons (1972) reported the species from localities throughout Cambodia, and Stuart et al. (2006) reported it from hilly eastern Cambodia.

***Cryptelytrops albolabris* (Gray, 1842)**

Thmar Baing: FMNH 263377, pine forest, 0358926 E 1289969 N, 800 m elev., 1 March 2004.

A juvenile has 11 supralabials, the first fused with the nasal; internasals in contact; supraocular narrow, equal in width to about two scales on top of the head; vertical eye diameter equal to distance from the ventral edge of eye to ventral edge of upper lip; 21 longitudinal scale rows at midbody; 170 ventrals; side of the head below eyes lighter in coloration (yellow in life) than the rest of the head (green in life); green dorsum in life; yellow venter in life; and dorsal surface and tip of tail reddish-brown in life.

The specimen was collected in a pitfall trap.

Bourret (1934) and Saint Girons (1972) reported the species from the Cambodian Cardamom Mountains, and Stuart et al. (2006) reported it from hilly eastern Cambodia.

***Cryptelytrops macrops* (Kramer, 1977)**

Sre Ambel: FMNH 259192, mangrove and melaleuca forest along Prek Kroch River (tributary of Prek Sre Ambol), 11°06′20″N 103°39′35″E, <10 m elev., 27 August 2000.

Thmar Baing: FMNH 263387, hill evergreen forest, 0358926 E 1289969 N, 800 m elev., 1 March 2004.

Areng Valley: FMNH 267732, seasonally flooded lowland evergreen forest, 0342411 E 1286399 N, 180 m elev., 24 August 2004.

A male and two females have short, broad heads; 10 supralabials, the first partly fused with the nasal; internasals in contact; broad supraocular, equal in width to about three scales on top of the head; vertical eye diameter greater than the distance from the ventral edge of eye to ventral edge of upper lip; 21 longitudinal scale rows at midbody; 175–177 ventrals; and a white marking on the first body scale row forming a ventrolateral stripe in preservative. These have a higher ventral scale count than specimens referred to this species from hilly eastern Cambodia (males with 161–163, females with 164–173; Stuart et al., 2006), and a study on geographic variation in these snakes is warranted.

FMNH 259192 was swimming at night (2000 h) in the middle of a river, FMNH 263387 was on bamboo 0.5 m above the ground 1 m from a small stream, and FMNH 267732 was collected at night (2000 h) on a tree trunk 0.5 m above the ground 10 m from a river.

Stuart et al. (2006) reported the species from hilly eastern Cambodia.

***Viridovipera vogeli* (David, Vidal & Pauwels, 2001)**
Knorgl Louk: FMNH 267733, evergreen forest, 0355440 E 1314799 N, 1200 m elev., 30 September 2004. FMNH 267734, evergreen forest, 0354290 E 1311937 N, 900 m elev., 27 September 2004.

A male and female agree with David et al.'s (2001) original description and Malhotra et al.'s (2004) expanded description by having the first supralabial separated from the nasal; internasals separated; male with short, spinose hemipenis; 163–165 ventrals; tail coloration in life mostly green with a dark gray or brown tip; and white vertebral spots.

Both specimens were collected 20 m from a stream. One was taken during the day (1400 h) on a mossy rock, and the other was taken at night (1930 h) on a tree 1 m above the ground.

Malhotra et al. (2004) reported the species from the Cambodian Cardamom Mountains, and Stuart et al. (2006) reported it from hilly eastern Cambodia.

Discussion

This collection of 28 species of amphibians and 50 species of reptiles contains 11 new additions to the herpetofauna of Cambodia. These include one frog (*Calluella guttulata*), six lizards (*Draco taeniopterus, Dasia olivacea, Lygosoma bowringii, Scincella melanosticta, Sphenomorphus stellatum*, and *Ptychozoon lionotum*), and four snakes (*Boiga dendrophila, B. multomaculata, Rhabdophis nigrocinctus*, and *Xenochrophis trianguligerus*).

Currently, six species of frogs are considered to have ranges restricted to the Cardamom Mountains, including offshore islands: *Limnonectes kohchangae, Paa fasciculispina, Rana faber, R. mortenseni, Megophrys auralensis*, and *Philautus cardamomus* Ohler, Swan & Daltry, 2002. The first three species are known from both the Cambodian and Thai Cardamom Mountains [see Stuart (2005) for a record of *R. faber* from southeastern Thailand], but the last two have not yet been reported from Thailand.

Only one species of reptile, the gecko *Cnemaspis chanthaburiensis* Bauer & Das, 1998, is considered to have a geographic range restricted to these uplands. The species is currently known only from the Thai Cardamom Mountains and has not yet been reported from Cambodia. *Cyrtodactylus intermedius, Draco indochinensis, D. taeniopterus, Tropidophorus microlepis*, and *Lycodon cardamomensis* Daltry & Wüster, 2002, were all originally described from these uplands but have since been reported from elsewhere (Smith, 1935; Inger & Colwell, 1977; Orlov, 2005; Stuart et al., 2006).

Stuart et al. (2006) reported on a collection of amphibians and reptiles from hilly eastern Cambodia (Mondolkiri, Ratanakiri, and Stung Treng Provinces), the other major upland area in Cambodia. Those authors concluded that frog species characteristic of anthropogenically modified environments are found in both hilly eastern Cambodia and the Cardamom Mountains but that intact areas in hilly eastern Cambodia contain a frog fauna that is very different from the Cardamom Mountains. Our report here on reptiles permits a first comparison between the lizard faunas of these two mountainous areas in Cambodia (the secretive nature of snakes precludes sound comparisons). All five species of lizards reported here from the Cambodian Cardamom Mountains as being characteristic of anthropogenically modified environments (Table 2) were also reported from hilly eastern Cambodia by Stuart et al. (2006), but only seven of 16 species (43.7%) of lizards characteristic of intact environments were shared between these two upland areas: *Calotes emma, C. mystaceus, Physignathus cocincinus, Takydromus sexlineatus, Lipinia vittigera, Sphenomorphus rufocaudatus*, and *S. maculatus*. There are limitations in comparing collections because of differences in the methods, durations, and timing of sampling. Nonetheless, it is reasonable to conclude that intact landscapes in the uplands of southwestern and eastern Cambodia contain two very different frog and lizard faunas. These findings have implications for national-level biodiversity conservation strategies.

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